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*C!* <120> Improvements in or relating to organic compounds

<130> S-137-1103/SG/A/SGS/PCT /

<140> US 09/180,798

<141> November 16, 1999

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<170> PatentIn Ver. 2.1

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In re Application DeVries et al.  
09/180,798

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<213> Daucus carota

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Gln Val Ala Leu Leu Cys Thr Gln Gly Ser Pro Met Glu Arg Pro Lys  
485 490 495

Met Ser Glu Val Val Arg Met Leu Glu Gly Asp Gly Leu Ala Glu Lys  
500 505 510

Trp Asp Glu Trp Gln Lys Val Glu Val Ile His Gln Asp Val Glu Leu  
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13

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14

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<210> 20  
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Pro	Asn	His	Ser	Leu	Trp	Leu	Ala	Ser	Ala	Asn	Leu	Glu	Gly	Asp	Ala	20	25	30
Leu	His	Thr	Leu	Arg	Val	Thr	Leu	Val	Asp	Pro	Asn	Asn	Val	Leu	Gln	35	40	45
Ser	Trp	Asp	Pro	Thr	Leu	Val	Asn	Pro	Cys	Thr	Trp	Phe	His	Val	Thr	50	55	60
Cys	Asn	Asn	Glu	Asn	Ser	Val	Ile	Arg	Val	Asp	Leu	Gly	Asn	Ala	Glu	65	70	75
Leu	Ser	Gly	His	Leu	Val	Pro	Glu	Leu	Gly	Val	Leu	Lys	Asn	Leu	Gln	85	90	95
Glu	Leu	Tyr	Ser	Asn	Asn	Ile	Thr	Gly	Pro	Ile	Pro	Ser	Asn	Leu	Gly	100	105	110
Asn	Leu	Thr	Asn	Leu	Val	Ser	Leu	Asp	Leu	Tyr	Leu	Asn	Ser	Phe	Ser	115	120	125
Gly	Pro	Ile	Pro	Glu	Ser	Leu	Gly	Lys	Leu	Ser	Lys	Leu	Arg	Phe	Leu	130	135	140
Arg	Leu	Asn	Asn	Asn	Ser	Leu	Thr	Gly	Ser	Ile	Pro	Met	Ser	Leu	Thr	145	150	155
Asn	Ile	Thr	Thr	Leu	Gln	Val	Leu	Asp	Leu	Ser	Asn	Asn	Arg	Leu	Ser	165	170	175
Gly	Ser	Val	Pro	Asp	Asn	Gly	Ser	Phe	Ser	Leu	Phe	Thr	Pro	Ile	Ser	180	185	190
Phe	Ala	Asn	Asn	Leu	Asp	Leu	Cys	Gly	Pro	Val	Thr	Ser	His	Pro	Cys	195	200	205
Pro	Gly	Ser	Pro	Pro	Phe	Ser	Pro	Pro	Pro	Pro	Phe	Ile	Gln	Pro	Pro	210	215	220
Pro	Val	Ser	Thr	Pro	Ser	Gly	Tyr	Gly	Ile	Thr	Gly	Ala	Ile	Ala	Gly	225	230	235
Gly	Val	Ala	Ala	Gly	Ala	Ala	Leu	Leu	Phe	Ala	Ala	Pro	Ala	Ile	Ala	245	250	255
Phe	Ala	Trp	Trp	Arg	Arg	Arg	Lys	Pro	Leu	Asp	Ile	Phe	Phe	Asp	Val	260	265	270
Pro	Ala	Glu	Glu	Asp	Pro	Glu	Val	His	Leu	Gly	Gln	Leu	Lys	Arg	Phe	275	280	285
Ser	Leu	Arg	Glu	Leu	Gln	Val	Ala	Ser	Asp	Gly	Phe	Ser	Asn	Lys	Asn	290	295	300
Ile	Leu	Gly	Arg	Gly	Gly	Phe	Gly	Lys	Val	Tyr	Lys	Gly	Arg	Leu	Ala	305	310	315
																		320

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Asp Gly Thr Leu Val Ala Val Lys Arg Leu Lys Glu Glu Arg Thr Pro
      325                      330                      335

Gly Gly Glu Leu Gln Phe Gln Thr Glu Val Glu Met Ile Ser Met Ala
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Val His Arg Asn Leu Leu Arg Leu Arg Gly Phe Cys Met Thr Pro Thr
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Glu Arg Leu Leu Val Tyr Pro Tyr Met Ala Asn Gly Ser Val Ala Ser
      370                      375                      380

Cys Leu Arg Glu Arg Pro Pro Ser Gln Pro Pro Leu Asp Trp Pro Thr
385                      390                      395                      400

Arg Lys Arg Ile Ala Leu Gly Ser Ala Arg Gly Leu Ser Tyr Leu His
      405                      410                      415

Asp His Cys Asp Pro Lys Ile Ile His Arg Asp Val Lys Ala Ala Asn
      420                      425                      430

Ile Leu Leu Asp Glu Glu Phe Glu Ala Val Val Gly Asp Phe Gly Leu
      435                      440                      445

Ala Lys Leu Met Asp Tyr Lys Asp Thr His Val Thr Thr Ala Val Arg
      450                      455                      460

Gly Thr Ile Gly His Ile Ala Pro Glu Tyr Leu Ser Thr Gly Lys Ser
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cttaaaccctc cgaaagctca c atg gcg tct cga aac tat cgg tgg gag ctc 171
                        Met Ala Ser Arg Asn Tyr Arg Trp Glu Leu
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ttc gca gct tcg tta acc cta acc tta gct ttg att cac ctg gtc gaa 219
Phe Ala Ala Ser Leu Thr Leu Thr Leu Ala Leu Ile His Leu Val Glu
      15                      20                      25

gca aac tcc gaa gga gat gct ctc tac gct ctt cgc cgg agt ttg aca 267

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Ala	Asn	Ser	Glu	Gly	Asp	Ala	Leu	Tyr	Ala	Leu	Arg	Arg	Ser	Leu	Thr		
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gat	cca	gac	cat	gtc	ctc	cag	agc	tgg	gat	cca	act	ctt	ggt	aat	cct	315	
Asp	Pro	Asp	His	Val	Leu	Gln	Ser	Trp	Asp	Pro	Thr	Leu	Val	Asn	Pro		
		45					50				55						
tgt	acc	tgg	ttc	cat	gtc	acc	tgt	aac	caa	gac	aac	cgc	gtc	act	cgt	363	
Cys	Thr	Trp	Phe	His	Val	Thr	Cys	Asn	Gln	Asp	Asn	Arg	Val	Thr	Arg		
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gtg	gat	ttg	gga	aat	tca	aac	ctc	tct	gga	cat	ctt	gcg	cct	gag	ctt	411	
Val	Asp	Leu	Gly	Asn	Ser	Asn	Leu	Ser	Gly	His	Leu	Ala	Pro	Glu	Leu		
	75				80				85						90		
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Gly	Lys	Leu	Glu	His	Leu	Gln	Tyr	Leu	Glu	Leu	Tyr	Lys	Asn	Asn	Ile		
			95					100					105				
caa	gga	act	ata	cct	tcc	gaa	ctt	gga	aat	ctg	aag	aat	ctc	atc	agc	507	
Gln	Gly	Thr	Ile	Pro	Ser	Glu	Leu	Gly	Asn	Leu	Lys	Asn	Leu	Ile	Ser		
			110					115					120				
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Leu	Asp	Leu	Tyr	Asn	Asn	Asn	Leu	Thr	Gly	Ile	Val	Pro	Thr	Phe	Leu		
		125					130					135					
gga	aaa	ttg	aag	tct	ctg	gtc	ttt	tta	cgg	ctt	aat	gac	aac	cga	ttg	603	
Gly	Lys	Leu	Lys	Ser	Leu	Val	Phe	Leu	Arg	Leu	Asn	Asp	Asn	Arg	Leu		
	140					145				150							
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Thr	Gly	Pro	Ile	Leu	Glu	His	Ser	Arg	Gln	Ser	Gln	Ala	Phe	Lys	Val		
	155				160				165					170			
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Val	Asp	Val	Ser	Ser	Asn	Asp	Leu	Cys	Gly	Thr	Ile	Pro	Thr	Asn	Gly		
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Pro	Phe	Ala	His	Ile	Pro	Leu	Gln	Asn	Phe	Glu	Asn	Asn	Pro	Arg	Leu		
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Gln Ser Trp Asp Pro Thr Leu Val Asn Pro Cys Thr Trp Phe His Val  
50 55 60  
Thr Cys Asn Gln Asp Asn Arg Val Thr Arg Val Asp Leu Gly Asn Ser  
65 70 75 80  
Asn Leu Ser Gly His Leu Ala Pro Glu Leu Gly Lys Leu Glu His Leu  
85 90 95  
Gln Tyr Leu Glu Leu Tyr Lys Asn Asn Ile Gln Gly Thr Ile Pro Ser  
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115 120 125  
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165 170 175  
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aac tat cgg tgg gag ctc ttc gca gct tcg tta acc cta acc tta gct 163
Asn Tyr Arg Trp Glu Leu Phe Ala Ala Ser Leu Thr Leu Thr Leu Ala
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ttg att cac ctg gtc gaa gca aac tcc gaa gga gat gct ctc tac gct 211
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Leu Arg Arg Ser Leu Thr Asp Pro Asp His Val Leu Gln Ser Trp Asp
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cca act ctt gtt aat cct tgt acc tgg ttc cat gtc acc tgt aac caa 307
Pro Thr Leu Val Asn Pro Cys Thr Trp Phe His Val Thr Cys Asn Gln
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cat ctt gcg cct gag ctt ggg aag ctt gaa cat tta cag tat cta gag 403
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Leu Asn Asp Asn Arg Leu Thr Gly Pro Ile Pro Arg Ala Leu Thr Ala
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Ile Pro Ser Leu Lys Val Val Asp Val Ser Ser Asn Asp Leu Cys Gly
165              170              175              180

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Thr Ile Pro Thr Asn Gly Pro Phe Ala His Ile Pro Leu Gln Asn Phe
      185                      190                      195

gag aac aac ccg aga ttg gag gga ccg gaa tta ctc ggt ctt gca agc 739
Glu Asn Asn Pro Arg Leu Glu Gly Pro Glu Leu Leu Gly Leu Ala Ser
      200                      205                      210

tac gac act aac tgc acc tgaacaact ggcaaacct gaaaatgaag 787
Tyr Asp Thr Asn Cys Thr
      215

aattgggggg tgaccttgta agaacacttc accactttat caaatatcac atctattatg 847

taataagtat atatatgtag taaaaacaaa aaaaatgaag aatcgaatcg gtaatatcat 907

ctggtctcaa ttgagaactt cgaggtctgt atgtaaaatt tctaaatgcg attttcgcct 967

aaattactca cact 981

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<211> 218
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<213> unknown

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Leu Thr Leu Ala Leu Ile His Leu Val Glu Ala Asn Ser Glu Gly Asp
      20              25              30

Ala Leu Tyr Ala Leu Arg Arg Ser Leu Thr Asp Pro Asp His Val Leu
      35              40              45

Gln Ser Trp Asp Pro Thr Leu Val Asn Pro Cys Thr Trp Phe His Val
      50              55              60

Thr Cys Asn Gln Asp Asn Arg Val Thr Arg Val Asp Leu Gly Asn Ser
      65              70              75              80

Asn Leu Ser Gly His Leu Ala Pro Glu Leu Gly Lys Leu Glu His Leu
      85              90              95

Gln Tyr Leu Glu Leu Tyr Lys Asn Asn Ile Gln Gly Thr Ile Pro Ser
      100              105              110

Glu Leu Gly Asn Leu Lys Asn Leu Ile Ser Leu Asp Leu Tyr Asn Asn
      115              120              125

Asn Leu Thr Gly Ile Val Pro Thr Ser Leu Gly Lys Leu Lys Ser Leu
      130              135              140

Val Phe Leu Arg Leu Asn Asp Asn Arg Leu Thr Gly Pro Ile Pro Arg
      145              150              155              160

Ala Leu Thr Ala Ile Pro Ser Leu Lys Val Val Asp Val Ser Ser Asn

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	165								170							175				
Asp	Leu	Cys	Gly	Thr	Ile	Pro	Thr	Asn	Gly	Pro	Phe	Ala	His	Ile	Pro					
			180					185					190							
Leu	Gln	Asn	Phe	Glu	Asn	Asn	Pro	Arg	Leu	Glu	Gly	Pro	Glu	Leu	Leu					
		195					200					205								
Gly	Leu	Ala	Ser	Tyr	Asp	Thr	Asn	Cys	Thr											
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<222> (2)..(661)

<400> 26

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 Arg Pro Thr Arg Pro Arg Asn Tyr Arg Trp Glu Leu Phe Ala Ala Ser
   1              5               10                15
```

```
tta atc cta acc tta gct ttg att cac ctg gtc gaa gca aac tcc gaa    97
Leu Ile Leu Thr Leu Ala Leu Ile His Leu Val Glu Ala Asn Ser Glu
      20             25            30
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```
gga gat gct ctt tac gct ctt cgc cgg agt tta aca gat ccg gac cat    145
Gly Asp Ala Leu Tyr Ala Leu Arg Arg Ser Leu Thr Asp Pro Asp His
     35          40           45
```

```
gtt ctc cag agc tgg gat cca act ctt gtt aat cct tgt acc tgg ttc    193
Val Leu Gln Ser Trp Asp Pro Thr Leu Val Asn Pro Cys Thr Trp Phe
     50        55         60
```

```
cat gtc acc tgt aac caa gac aac cgc gtc act cgt gtg gat ttg ggg    241
His Val Thr Cys Asn Gln Asp Asn Arg Val Thr Arg Val Asp Leu Gly
     65       70      75
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aat tca aac ctc tct gga cat ctt gcg cct gag ctt ggg aag ctt gaa    289
Asn Ser Asn Leu Ser Gly His Leu Ala Pro Glu Leu Gly Lys Leu Glu
      85           90          95
```

```
cat tta cag tat cta gag ctg tac aaa aac aac atc caa gga act ata    337
His Leu Gln Tyr Leu Glu Leu Tyr Lys Asn Asn Ile Gln Gly Thr Ile
     100        105       110
```

```
cct tcc gaa ctt gga aat ctg aag aat ctg atc agc ttg gat ctg tac    385
Pro Ser Glu Leu Gly Asn Leu Lys Asn Leu Ile Ser Leu Asp Leu Tyr
     115        120       125
```

```
aac aac aat ctt aca ggg ata gtt ccc act tct ttg gga aaa ttg aag    433
Asn Asn Asn Leu Thr Gly Ile Val Pro Thr Ser Leu Gly Lys Leu Lys
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130	135	140	
tct ctg gtc ttt tta cgg ctt aat gac aac cga ttg acg ggg cca atc			481
Ser Leu Val Phe Leu Arg Leu Asn Asp Asn Arg Leu Thr Gly Pro Ile			
145	150	155	160
cct aga gca ctc act gca atc cca agc ctt aaa gtt gtt gat gtc tca			529
Pro Arg Ala Leu Thr Ala Ile Pro Ser Leu Lys Val Val Asp Val Ser			
	165	170	175
agc aat gat ttg tgt gga aca atc cca aca aac gga cct ttt gct cac			577
Ser Asn Asp Leu Cys Gly Thr Ile Pro Thr Asn Gly Pro Phe Ala His			
	180	185	190
att cct tta cag aac ttt gag aac aac ccg agg ttg gag gga ccg gaa			625
Ile Pro Leu Gln Asn Phe Glu Asn Asn Pro Arg Leu Glu Gly Pro Glu			
	195	200	205
tta ctc ggt ctt gca agc tac gac act aac tgc acc tgaaaaaatt			671
Leu Leu Gly Leu Ala Ser Tyr Asp Thr Asn Cys Thr			
	210	215	220
ggcaaaacct gaaaatgaag aattgggggg tgaccttgta agaacacttc accactttat			731
caaatatcac atctactatg taataagtat atatatgtag tccaaaaaaa aaaaaaaa			789
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Leu Ile Leu Thr Leu Ala Leu Ile His Leu Val Glu Ala Asn Ser Glu			
	20	25	30
Gly Asp Ala Leu Tyr Ala Leu Arg Arg Ser Leu Thr Asp Pro Asp His			
	35	40	45
Val Leu Gln Ser Trp Asp Pro Thr Leu Val Asn Pro Cys Thr Trp Phe			
	50	55	60
His Val Thr Cys Asn Gln Asp Asn Arg Val Thr Arg Val Asp Leu Gly			
	65	70	75
Asn Ser Asn Leu Ser Gly His Leu Ala Pro Glu Leu Gly Lys Leu Glu			
	85	90	95
His Leu Gln Tyr Leu Glu Leu Tyr Lys Asn Asn Ile Gln Gly Thr Ile			
	100	105	110
Pro Ser Glu Leu Gly Asn Leu Lys Asn Leu Ile Ser Leu Asp Leu Tyr			
	115	120	125

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Asn Asn Asn Leu Thr Gly Ile Val Pro Thr Ser Leu Gly Lys Leu Lys
 130                      135                      140

Ser Leu Val Phe Leu Arg Leu Asn Asp Asn Arg Leu Thr Gly Pro Ile
145                      150                      155                      160

Pro Arg Ala Leu Thr Ala Ile Pro Ser Leu Lys Val Val Asp Val Ser
                      165                      170                      175

Ser Asn Asp Leu Cys Gly Thr Ile Pro Thr Asn Gly Pro Phe Ala His
                      180                      185                      190

Ile Pro Leu Gln Asn Phe Glu Asn Asn Pro Arg Leu Glu Gly Pro Glu
                      195                      200                      205

Leu Leu Gly Leu Ala Ser Tyr Asp Thr Asn Cys Thr
 210                      215                      220

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 1                      5                      10                      15

agc tta tca gat cca gac aat gtt gtt cag agt tgg gat cca act ctt 96
Ser Leu Ser Asp Pro Asp Asn Val Val Gln Ser Trp Asp Pro Thr Leu
                      20                      25                      30

gtt aat cct tgt act tgg ttt cat gtc act tgt aat caa cac cat caa 144
Val Asn Pro Cys Thr Trp Phe His Val Thr Cys Asn Gln His His Gln
                      35                      40                      45

gtc act cgt ctg gat ttg ggg aat tca aac tta tct gga cat cta gta 192
Val Thr Arg Leu Asp Leu Gly Asn Ser Asn Leu Ser Gly His Leu Val
                      50                      55                      60

cct gaa ctt ggg aag ctt gaa cat tta caa tat ctg tat gga atc atc 240
Pro Glu Leu Gly Lys Leu Glu His Leu Gln Tyr Leu Tyr Gly Ile Ile
 65                      70                      75                      80

act ctt ttg cct ttt gat tat ctg aaa aca ttt aca tta tca gtc aca 288
Thr Leu Leu Pro Phe Asp Tyr Leu Lys Thr Phe Thr Leu Ser Val Thr
                      85                      90                      95

cat ata aca ttt tgc ttt gag tca tat agt gaa ctc tac aaa aac gag 336
His Ile Thr Phe Cys Phe Glu Ser Tyr Ser Glu Leu Tyr Lys Asn Glu
                      100                      105                      110

```

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att caa gga act ata cct tct gag ctt gga aat ctg aag agt cta atc 384
Ile Gln Gly Thr Ile Pro Ser Glu Leu Gly Asn Leu Lys Ser Leu Ile
      115                120                125

agt ttg gat ctg tac aac aac aat ctc acc ggg aaa atc cca tct tct 432
Ser Leu Asp Leu Tyr Asn Asn Asn Leu Thr Gly Lys Ile Pro Ser Ser
      130                135                140

ttg gga aaa ttg aag tca ctt gtt ttt ttg cgg ctt aac gaa aac cga 480
Leu Gly Lys Leu Lys Ser Leu Val Phe Leu Arg Leu Asn Glu Asn Arg
145                150                155                160

ttg acc ggt cct att cct aga gaa ctc aca gtt att tca agc ctt aaa 528
Leu Thr Gly Pro Ile Pro Arg Glu Leu Thr Val Ile Ser Ser Leu Lys
      165                170                175

gtt gtt gat gtc tca ggg aat gat ttg tgt gga aca att cca gta gaa 576
Val Val Asp Val Ser Gly Asn Asp Leu Cys Gly Thr Ile Pro Val Glu
      180                185                190

gga cct ttt gaa cac att cct atg caa aac ttt gag aac aac ctg aga 624
Gly Pro Phe Glu His Ile Pro Met Gln Asn Phe Glu Asn Asn Leu Arg
      195                200                205

ttg gag gga cca gaa cta cta ggt ctt gcg agc tat gac acc aat tgc 672
Leu Glu Gly Pro Glu Leu Leu Gly Leu Ala Ser Tyr Asp Thr Asn Cys
      210                215                220

act taaaaagaag ttgaagaacc tataaagaag aatgtaggt gaccttgtaa 725
Thr
225

gaactctgta ccaagtgttt gtaaatctat atagagcctt gtttcatggt atatatgaaa 785

gctttgagag acagtaacct gcaatgtatt ggtattggta gaaaaagttg aaatgagaat 845

tgctttgtaa ttggatttgt gtttcttatg taacttgaat ttcttatta 894

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      20                25                30

Val Asn Pro Cys Thr Trp Phe His Val Thr Cys Asn Gln His His Gln
      35                40                45

Val Thr Arg Leu Asp Leu Gly Asn Ser Asn Leu Ser Gly His Leu Val
      50                55                60

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Pro Glu Leu Gly Lys Leu Glu His Leu Gln Tyr Leu Tyr Gly Ile Ile  
65 70 75 80

Thr Leu Leu Pro Phe Asp Tyr Leu Lys Thr Phe Thr Leu Ser Val Thr  
85 90 95

His Ile Thr Phe Cys Phe Glu Ser Tyr Ser Glu Leu Tyr Lys Asn Glu  
100 105 110

Ile Gln Gly Thr Ile Pro Ser Glu Leu Gly Asn Leu Lys Ser Leu Ile  
115 120 125

Ser Leu Asp Leu Tyr Asn Asn Asn Leu Thr Gly Lys Ile Pro Ser Ser  
130 135 140

Leu Gly Lys Leu Lys Ser Leu Val Phe Leu Arg Leu Asn Glu Asn Arg  
145 150 155 160

Leu Thr Gly Pro Ile Pro Arg Glu Leu Thr Val Ile Ser Ser Leu Lys  
165 170 175

Val Val Asp Val Ser Gly Asn Asp Leu Cys Gly Thr Ile Pro Val Glu  
180 185 190

Gly Pro Phe Glu His Ile Pro Met Gln Asn Phe Glu Asn Asn Leu Arg  
195 200 205

Leu Glu Gly Pro Glu Leu Leu Gly Leu Ala Ser Tyr Asp Thr Asn Cys  
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Thr  
225

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Met Ala Ser Arg  
1

aac tat cgg tgg gag ctc ttc gca gct tcg tta atc cta acc tta gct 165  
Asn Tyr Arg Trp Glu Leu Phe Ala Ala Ser Leu Ile Leu Thr Leu Ala  
5 10 15 20  
ttg att cac ctg gtc gaa gca aac tcc gaa gga gat gct ctt tac gct 213

Leu	Ile	His	Leu	Val	Glu	Ala	Asn	Ser	Glu	Gly	Asp	Ala	Leu	Tyr	Ala		
				25					30					35			
ctt	cgc	cgg	agt	tta	aca	gat	ccg	gac	cat	gtt	ctc	cag	agc	tgg	gat	261	
Leu	Arg	Arg	Ser	Leu	Thr	Asp	Pro	Asp	His	Val	Leu	Gln	Ser	Trp	Asp		
			40					45					50				
cca	act	ctt	gtt	aat	cct	tgt	acc	tgg	ttc	cat	gtc	acc	tgt	aac	caa	309	
Pro	Thr	Leu	Val	Asn	Pro	Cys	Thr	Trp	Phe	His	Val	Thr	Cys	Asn	Gln		
		55					60					65					
gac	aac	cgc	gtc	act	cgt	gtg	gat	ttg	ggg	aat	tca	aac	ctc	tct	gga	357	
Asp	Asn	Arg	Val	Thr	Arg	Val	Asp	Leu	Gly	Asn	Ser	Asn	Leu	Ser	Gly		
	70					75					80						
cat	ctt	gcg	cct	gag	ctt	ggg	aag	ctt	gaa	cat	tta	cag	tat	cta	gag	405	
His	Leu	Ala	Pro	Glu	Leu	Gly	Lys	Leu	Glu	His	Leu	Gln	Tyr	Leu	Glu		
	85				90					95					100		
ctc	tac	aaa	aac	aac	atc	caa	gga	act	ata	cct	tcc	gaa	ctt	gga	aat	453	
Leu	Tyr	Lys	Asn	Asn	Ile	Gln	Gly	Thr	Ile	Pro	Ser	Glu	Leu	Gly	Asn		
				105					110					115			
ctg	aag	aat	ctc	atc	agc	ttg	gat	ctg	tac	aac	aac	aat	ctt	aca	ggg	501	
Leu	Lys	Asn	Leu	Ile	Ser	Leu	Asp	Leu	Tyr	Asn	Asn	Asn	Leu	Thr	Gly		
			120					125					130				
ata	gtt	ccc	act	tct	ttg	gga	aaa	ttg	aag	tct	ctg	gtc	ttt	tta	cgg	549	
Ile	Val	Pro	Thr	Ser	Leu	Gly	Lys	Leu	Lys	Ser	Leu	Val	Phe	Leu	Arg		
		135					140					145					
ctt	aat	gac	aac	cga	ttg	acg	ggg	cca	atc	cct	aga	gca	ctc	act	gca	597	
Leu	Asn	Asp	Asn	Arg	Leu	Thr	Gly	Pro	Ile	Pro	Arg	Ala	Leu	Thr	Ala		
	150						155				160						
atc	cca	agc	ctt	aaa	gtt	gtt	gat	gtc	tca	agc	aat	gat	ttg	tgt	gga	645	
Ile	Pro	Ser	Leu	Lys	Val	Val	Asp	Val	Ser	Ser	Asn	Asp	Leu	Cys	Gly		
	165				170					175				180			
aca	atc	cca	aca	aac	gga	cct	ttt	gct	cac	att	cct	tta	cag	aac	ttt	693	
Thr	Ile	Pro	Thr	Asn	Gly	Pro	Phe	Ala	His	Ile	Pro	Leu	Gln	Asn	Phe		
				185					190					195			
gag	aac	aac	ccg	agg	ttg	gag	gga	ccg	gaa	tta	ctc	ggt	ctt	gca	agc	741	
Glu	Asn	Asn	Pro	Arg	Leu	Glu	Gly	Pro	Glu	Leu	Leu	Gly	Leu	Ala	Ser		
			200					205					210				
tac	gac	act	aac	tgc	acc	tgaaaaaatt	ggcaaacct	gaaaatgaag								789	
Tyr	Asp	Thr	Asn	Cys	Thr												
			215														
aattgggggg	tgaccttgta	agaacacttc	accactttat	caaatatcac	atctactatg											849	
taataagtat	atatatgtag	tccaaaaaaa	aatgaagaa	tcgaatcagt	aatatcatct											909	
gggtctcaatt	gagaactttg	aggtctgtgt	atgtaaaatt	tctaaatgcg	actttcgcgt											969	

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actgtaatgt tcggttggtg gattctgaga agtaacattt gtattggtat ggtatcaagt 1029  
tgttctgcct tgtctgcaaa aaaaaaaaaa aaaa 1063

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Ala Leu Tyr Ala Leu Arg Arg Ser Leu Thr Asp Pro Asp His Val Leu  
35 40 45  
Gln Ser Trp Asp Pro Thr Leu Val Asn Pro Cys Thr Trp Phe His Val  
50 55 60  
Thr Cys Asn Gln Asp Asn Arg Val Thr Arg Val Asp Leu Gly Asn Ser  
65 70 75 80  
Asn Leu Ser Gly His Leu Ala Pro Glu Leu Gly Lys Leu Glu His Leu  
85 90 95  
Gln Tyr Leu Glu Leu Tyr Lys Asn Asn Ile Gln Gly Thr Ile Pro Ser  
100 105 110  
Glu Leu Gly Asn Leu Lys Asn Leu Ile Ser Leu Asp Leu Tyr Asn Asn  
115 120 125  
Asn Leu Thr Gly Ile Val Pro Thr Ser Leu Gly Lys Leu Lys Ser Leu  
130 135 140  
Val Phe Leu Arg Leu Asn Asp Asn Arg Leu Thr Gly Pro Ile Pro Arg  
145 150 155 160  
Ala Leu Thr Ala Ile Pro Ser Leu Lys Val Val Asp Val Ser Ser Asn  
165 170 175  
Asp Leu Cys Gly Thr Ile Pro Thr Asn Gly Pro Phe Ala His Ile Pro  
180 185 190  
Leu Gln Asn Phe Glu Asn Asn Pro Arg Leu Glu Gly Pro Glu Leu Leu  
195 200 205  
Gly Leu Ala Ser Tyr Asp Thr Asn Cys Thr  
210 215

<210> 32  
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<212> DNA

<213> Arabidopsis thaliana

<220>

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<222> (195)..(2069)

<400> 32

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attttcggaa gttaggggtt tctcggtatc gaagagatca aatcaagatt cgaaatttac 180

cattgttggt tgaa atg gag tcg agt tat gtg gtg ttt atc tta ctt tca 230
      Met Glu Ser Ser Tyr Val Val Phe Ile Leu Leu Ser
            1             5             10

ctg atc tta ctt ccg aat cat tca ctg tgg ctt gct tct gct aat ttg 278
Leu Ile Leu Leu Pro Asn His Ser Leu Trp Leu Ala Ser Ala Asn Leu
      15             20             25

gaa ggt gat gct ttg cat act ttg agg gtt act cta gtt gat cca aac 326
Glu Gly Asp Ala Leu His Thr Leu Arg Val Thr Leu Val Asp Pro Asn
      30             35             40

aat gtc ttg cag agc tgg gat cct acg cta gtg aat cct tgc aca tgg 374
Asn Val Leu Gln Ser Trp Asp Pro Thr Leu Val Asn Pro Cys Thr Trp
      45             50             55             60

ttc cat gtc act tgc aac aac gag aac agt gtc ata aga gtt gat ttg 422
Phe His Val Thr Cys Asn Asn Glu Asn Ser Val Ile Arg Val Asp Leu
      65             70             75

ggg aat gca gag tta tct ggc cat tta gtt cca gag ctt ggt gtg ctc 470
Gly Asn Ala Glu Leu Ser Gly His Leu Val Pro Glu Leu Gly Val Leu
      80             85             90

aag aat ttg cag tat ttg gag ctt tac agt aac aac ata act ggc ccg 518
Lys Asn Leu Gln Tyr Leu Glu Leu Tyr Ser Asn Asn Ile Thr Gly Pro
      95             100             105

att cct agt aat ctt gga aat ctg aca aac tta gtg agt ttg gat ctt 566
Ile Pro Ser Asn Leu Gly Asn Leu Thr Asn Leu Val Ser Leu Asp Leu
      110             115             120

tac tta aac agc ttc tcc ggt cct att ccg gaa tca ttg gga aag ctt 614
Tyr Leu Asn Ser Phe Ser Gly Pro Ile Pro Glu Ser Leu Gly Lys Leu
      125             130             135             140

tca aag ctg aga ttt ctc cgg ctt aac aac aac agt ctc act ggg tca 662
Ser Lys Leu Arg Phe Leu Arg Leu Asn Asn Asn Ser Leu Thr Gly Ser
      145             150             155

att cct atg tca ctg acc aat att act acc ctt caa gtg tta gat cta 710
Ile Pro Met Ser Leu Thr Asn Ile Thr Thr Leu Gln Val Leu Asp Leu
      160             165             170

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ctc ttc aca ccc atc agt ttt gct aat aac tta gac cta tgt gga cct	806
Leu Phe Thr Pro Ile Ser Phe Ala Asn Asn Leu Asp Leu Cys Gly Pro	
190 195 200	
ggt aca agt cac cca tgt cct gga tct ccc ccg ttt tct cct cca cca	854
Val Thr Ser His Pro Cys Pro Gly Ser Pro Phe Ser Pro Pro Pro	
205 210 215 220	
cct ttt att caa cct ccc cca gtt tcc acc ccg agt ggg tat ggt ata	902
Pro Phe Ile Gln Pro Pro Pro Val Ser Thr Pro Ser Gly Tyr Gly Ile	
225 230 235	
act gga gca ata gct ggt gga gtt gct gca ggt gct gct ttg ccc ttt	950
Thr Gly Ala Ile Ala Gly Gly Val Ala Ala Gly Ala Ala Leu Pro Phe	
240 245 250	
gct gct cct gca ata gcc ttt gct tgg tgg cga cga aga agc cca cta	998
Ala Ala Pro Ala Ile Ala Phe Ala Trp Trp Arg Arg Arg Ser Pro Leu	
255 260 265	
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Asp Ile Phe Phe Asp Val Pro Ala Glu Glu Asp Pro Glu Val His Leu	
270 275 280	
gga cag ctc aag agg ttt tct ttg cgg gag cta caa gtg gcg agt gat	1094
Gly Gln Leu Lys Arg Phe Ser Leu Arg Glu Leu Gln Val Ala Ser Asp	
285 290 295 300	
ggg ttt agt aac aag aac att ttg ggc aga ggt ggg ttt ggg aaa gtc	1142
Gly Phe Ser Asn Lys Asn Ile Leu Gly Arg Gly Gly Phe Gly Lys Val	
305 310 315	
tac aag gga cgc ttg gca gac gga act ctt gtt gct gtc aag aga ctg	1190
Tyr Lys Gly Arg Leu Ala Asp Gly Thr Leu Val Ala Val Lys Arg Leu	
320 325 330	
aag gaa gag cga act cca ggt gga gag ctc cag ttt caa aca gaa gta	1238
Lys Glu Glu Arg Thr Pro Gly Gly Glu Leu Gln Phe Gln Thr Glu Val	
335 340 345	
gag atg ata agt atg gca gtt cat cga aac ctg ttg aga tta cga ggt	1286
Glu Met Ile Ser Met Ala Val His Arg Asn Leu Leu Arg Leu Arg Gly	
350 355 360	
ttc tgt atg aca ccg acc gag aga ttg ctt gtg tat cct tac atg gcc	1334
Phe Cys Met Thr Pro Thr Glu Arg Leu Leu Val Tyr Pro Tyr Met Ala	
365 370 375 380	
aat gga agt gtt gct tcg tgt ctc aga gag agg cca ccg tca caa cct	1382
Asn Gly Ser Val Ala Ser Cys Leu Arg Glu Arg Pro Pro Ser Gln Pro	
385 390 395	

ccg ctt gat tgg cca acg cgg aag aga atc gcg cta ggc tca gct cga Pro Leu Asp Trp Pro Thr Arg Lys Arg Ile Ala Leu Gly Ser Ala Arg 400 405 410	1430
ggt ttg tct tac cta cat gat cac tgc gat ccg aag atc att cac cgt Gly Leu Ser Tyr Leu His Asp His Cys Asp Pro Lys Ile Ile His Arg 415 420 425	1478
gac gta aaa gca gca aac atc ctc tta gac gaa gaa ttc gaa gcg gtt Asp Val Lys Ala Ala Asn Ile Leu Leu Asp Glu Glu Phe Glu Ala Val 430 435 440	1526
gtt gga gat ttc ggg ttg gca aag ctt atg gac tat aaa gac act cac Val Gly Asp Phe Gly Leu Ala Lys Leu Met Asp Tyr Lys Asp Thr His 445 450 455 460	1574
gtg aca aca gca gtc cgt ggc acc atc ggt cac atc gct cca gaa tat Val Thr Thr Ala Val Arg Gly Thr Ile Gly His Ile Ala Pro Glu Tyr 465 470 475	1622
ctc tca acc gga aaa tct tca gag aaa acc gac gtt ttc gga tac gga Leu Ser Thr Gly Lys Ser Ser Glu Lys Thr Asp Val Phe Gly Tyr Gly 480 485 490	1670
atc atg ctt cta gaa cta atc aca gga caa aga gct ttc gat ctc gct Ile Met Leu Leu Glu Leu Ile Thr Gly Gln Arg Ala Phe Asp Leu Ala 495 500 505	1718
cgg cta gct aac gac gac gac gtc atg tta ctt gac tgg gtg aaa gga Arg Leu Ala Asn Asp Asp Asp Val Met Leu Leu Asp Trp Val Lys Gly 510 515 520	1766
ttg ttg aag gag aag aag cta gag atg tta gtg gat cca gat ctt caa Leu Leu Lys Glu Lys Lys Leu Glu Met Leu Val Asp Pro Asp Leu Gln 525 530 535 540	1814
aca aac tac gag gag aga gaa ctg gaa caa gtg ata caa gtg gcg ttg Thr Asn Tyr Glu Glu Arg Glu Leu Glu Gln Val Ile Gln Val Ala Leu 545 550 555	1862
cta tgc acg caa gga tca cca atg gaa aga cca aag atg tct gaa gtt Leu Cys Thr Gln Gly Ser Pro Met Glu Arg Pro Lys Met Ser Glu Val 560 565 570	1910
gta agg atg ctg gaa gga gat ggg ctt gcg gag aaa tgg gac gaa tgg Val Arg Met Leu Glu Gly Asp Gly Leu Ala Glu Lys Trp Asp Glu Trp 575 580 585	1958
caa aaa gtt gag att ttg agg gaa gag att gat ttg agt cct aat cct Gln Lys Val Glu Ile Leu Arg Glu Glu Ile Asp Leu Ser Pro Asn Pro 590 595 600	2006
aac tct gat tgg att ctt gat tct act tac aat ttg cac gcc gtt gag Asn Ser Asp Trp Ile Leu Asp Ser Thr Tyr Asn Leu His Ala Val Glu 605 610 615 620	2054
tta tct ggt cca agg taataaaaaa aaaaaaaa	2089

Leu Ser Gly Pro Arg  
625

<210> 33  
<211> 625  
<212> PRT  
<213> Arabidopsis thaliana

<400> 33  
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1 5 10 15  
Pro Asn His Ser Leu Trp Leu Ala Ser Ala Asn Leu Glu Gly Asp Ala  
20 25 30  
Leu His Thr Leu Arg Val Thr Leu Val Asp Pro Asn Asn Val Leu Gln  
35 40 45  
Ser Trp Asp Pro Thr Leu Val Asn Pro Cys Thr Trp Phe His Val Thr  
50 55 60  
Cys Asn Asn Glu Asn Ser Val Ile Arg Val Asp Leu Gly Asn Ala Glu  
65 70 75 80  
Leu Ser Gly His Leu Val Pro Glu Leu Gly Val Leu Lys Asn Leu Gln  
85 90 95  
Tyr Leu Glu Leu Tyr Ser Asn Asn Ile Thr Gly Pro Ile Pro Ser Asn  
100 105 110  
Leu Gly Asn Leu Thr Asn Leu Val Ser Leu Asp Leu Tyr Leu Asn Ser  
115 120 125  
Phe Ser Gly Pro Ile Pro Glu Ser Leu Gly Lys Leu Ser Lys Leu Arg  
130 135 140  
Phe Leu Arg Leu Asn Asn Asn Ser Leu Thr Gly Ser Ile Pro Met Ser  
145 150 155 160  
Leu Thr Asn Ile Thr Thr Leu Gln Val Leu Asp Leu Ser Asn Asn Arg  
165 170 175  
Leu Ser Gly Ser Val Pro Asp Asn Gly Ser Phe Ser Leu Phe Thr Pro  
180 185 190  
Ile Ser Phe Ala Asn Asn Leu Asp Leu Cys Gly Pro Val Thr Ser His  
195 200 205  
Pro Cys Pro Gly Ser Pro Pro Phe Ser Pro Pro Pro Phe Ile Gln  
210 215 220  
Pro Pro Pro Val Ser Thr Pro Ser Gly Tyr Gly Ile Thr Gly Ala Ile  
225 230 235 240  
Ala Gly Gly Val Ala Ala Gly Ala Ala Leu Pro Phe Ala Ala Pro Ala  
245 250 255

Ile	Ala	Phe	Ala	Trp	Trp	Arg	Arg	Arg	Ser	Pro	Leu	Asp	Ile	Phe	Phe	260	265	270
Asp	Val	Pro	Ala	Glu	Glu	Asp	Pro	Glu	Val	His	Leu	Gly	Gln	Leu	Lys	275	280	285
Arg	Phe	Ser	Leu	Arg	Glu	Leu	Gln	Val	Ala	Ser	Asp	Gly	Phe	Ser	Asn	290	295	300
Lys	Asn	Ile	Leu	Gly	Arg	Gly	Gly	Phe	Gly	Lys	Val	Tyr	Lys	Gly	Arg	305	310	315
Leu	Ala	Asp	Gly	Thr	Leu	Val	Ala	Val	Lys	Arg	Leu	Lys	Glu	Glu	Arg	325	330	335
Thr	Pro	Gly	Gly	Glu	Leu	Gln	Phe	Gln	Thr	Glu	Val	Glu	Met	Ile	Ser	340	345	350
Met	Ala	Val	His	Arg	Asn	Leu	Leu	Arg	Leu	Arg	Gly	Phe	Cys	Met	Thr	355	360	365
Pro	Thr	Glu	Arg	Leu	Leu	Val	Tyr	Pro	Tyr	Met	Ala	Asn	Gly	Ser	Val	370	375	380
Ala	Ser	Cys	Leu	Arg	Glu	Arg	Pro	Pro	Ser	Gln	Pro	Pro	Leu	Asp	Trp	385	390	395
Pro	Thr	Arg	Lys	Arg	Ile	Ala	Leu	Gly	Ser	Ala	Arg	Gly	Leu	Ser	Tyr	405	410	415
Leu	His	Asp	His	Cys	Asp	Pro	Lys	Ile	Ile	His	Arg	Asp	Val	Lys	Ala	420	425	430
Ala	Asn	Ile	Leu	Leu	Asp	Glu	Glu	Phe	Glu	Ala	Val	Val	Gly	Asp	Phe	435	440	445
Gly	Leu	Ala	Lys	Leu	Met	Asp	Tyr	Lys	Asp	Thr	His	Val	Thr	Thr	Ala	450	455	460
Val	Arg	Gly	Thr	Ile	Gly	His	Ile	Ala	Pro	Glu	Tyr	Leu	Ser	Thr	Gly	465	470	475
Lys	Ser	Ser	Glu	Lys	Thr	Asp	Val	Phe	Gly	Tyr	Gly	Ile	Met	Leu	Leu	485	490	495
Glu	Leu	Ile	Thr	Gly	Gln	Arg	Ala	Phe	Asp	Leu	Ala	Arg	Leu	Ala	Asn	500	505	510
Asp	Asp	Asp	Val	Met	Leu	Leu	Asp	Trp	Val	Lys	Gly	Leu	Leu	Lys	Glu	515	520	525
Lys	Lys	Leu	Glu	Met	Leu	Val	Asp	Pro	Asp	Leu	Gln	Thr	Asn	Tyr	Glu	530	535	540
Glu	Arg	Glu	Leu	Glu	Gln	Val	Ile	Gln	Val	Ala	Leu	Leu	Cys	Thr	Gln	545	550	555



In re Application DeVries et al.  
09/180,798

Gly Ser Pro Met Glu Arg Pro Lys Met Ser Glu Val Val Arg Met Leu  
565 570 575

Glu Gly Asp Gly Leu Ala Glu Lys Trp Asp Glu Trp Gln Lys Val Glu  
580 585 590

Ile Leu Arg Glu Glu Ile Asp Leu Ser Pro Asn Pro Asn Ser Asp Trp  
595 600 605

Ile Leu Asp Ser Thr Tyr Asn Leu His Ala Val Glu Leu Ser Gly Pro  
610 615 620

Arg  
625

33

1